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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,654	04/24/2001	David Morris Hamilton JR.	TH2038 (US)	6431

7590 06/30/2003

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EXAMINER

PRICE, ELVIS O

ART UNIT

PAPER NUMBER

1621

DATE MAILED: 06/30/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/841,654

Applicant(s)

HAMILTON, DAVID MORRIS

Examiner

Elvis O. Price

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Claims 1-49 are pending in the application.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-49 rejected under 35 U.S.C. 103(a) as being unpatentable over Kharitonov et al. {U.S. Pat. 5,110,995}.

Applicants claim a process comprising: continuously contacting, in a distillation column reactor comprising a reaction zone and a distillation zone, benzene with a zeolite catalyst effective to hydroxylate benzene and an oxidant at a temperature in the range of from about 100 C to 270 C thereby producing a hydroxylated product, wherein at least a portion of said benzene being in a liquid phase; continuously separating said hydroxylated product from the unreacted benzene in the distillation zone under conditions effective to vaporize said unreacted benzene and maintain said hydroxylated product in a liquid phase; and recovering the said hydroxylated product from the distillation column reactor.

Kharitonov et al. teach a process for producing a hydroxylated aromatic compound (phenol) from the oxidation of an aromatic compound (e.g., benzene) with an oxidation catalyst (a zeolite catalyst) and oxidant (nitrous oxide) (see Example 1). The oxidation catalyst used in the Kharitonov et al. invention is made of high-silica zeolites

Art Unit: 1621

of various structural types such as ZSM-5, ZSM-11 and BETA (Col. 3, lines 46-68 and Col. 4, lines 1-9), which contain iron and can contain at least one element of periods 2, 3, 4 or 5 of the periodic table (Col. 3, lines 46-54). The selectivity of the hydroxylated aromatic product (phenol) is as much as 100% (see table 1 and 2), and the separation of the hydroxylated product from the un-hydroxylated product is carried out using conventional distillation techniques (Col. 5, lines 10-12). The difference between the presently claimed invention and the Kharitonov et al. reference is that the Kharitonov et al. reference teaches a temperature range from about 275 C to 450 C and is silent about the reaction pressure of their process.

However, the presently claimed temperature of about 270 C is sufficiently close to the temperature of about 275 C taught by Kharitonov et al., such a difference in degree would not be rendered patentably distinct from the prior art. Additionally, since Kharitonov et al. are silent with regard to pressure the skilled artisan would have expected that standard atmospheric pressure is being employed in the process of Kharitonov et al. Thus, the presently claimed process would have been obvious to one having ordinary skill in the art.

### ***Response to Arguments***

Applicant's arguments, filed 4/8/03, have been fully considered but they are not persuasive.

Applicant argues that the Kharitonov et al. reference does not disclose or teach the use of a distillation column reactor comprising a reaction zone and a distillation zone.

This argument is not convincing because the Kharitonov et al. reference teaches that the hydroxylated product(s) obtained from the reactor are isolated by conventional distillation techniques (Col. 5, lines 3-12). Thus, it would have been obvious to one having ordinary skill in the art, depending on cost and process feasibility, to carry out the process using a distillation column reactor.

Applicant argues that the presently claimed process is carried out in such a way that at least a portion of the benzene is in a liquid phase whereas, it appears that the Kharitonov et al. process is carried out as a gas phase process.

This argument is not persuasive because the Kharitonov et al. reference does not teach or suggest that their process is a gas phase process. Additionally, applicants claim language is not limited to a process wherein at least a portion of the benzene is in a liquid phase.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 703 605-1204. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703 308-4532. The fax phone numbers for the organization where this application or proceeding is assigned is 703 308-4556.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.

Elvis O. Price, Ph.D.

June 24, 2003

  
SHAIENDRA KUMAR  
PRIMARY EXAMINER  
GROUP 1200  
1621

*for* \_\_\_\_\_  
Johann R. Richter, Esq., Ph.D.  
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